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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/668,609

09/24/2003

Hiroshi Kanno

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10/24/2005

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EXAMINER

MAI, ANH D

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/668,609

Applicant(s)

KANNO ET AL.

Examiner

Anh D. Mai

Art Unit

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Status of the Claims*

1. Amendment filed August 9, 2005 has been entered. Claim 3 has been cancelled. Claim 1 has been amended. Non-elected invention, claims 11-18 have been withdrawn. Claims 1, 2 and 4-18 are pending.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 2 and 4-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “thin film formed by plasma-treatment” in claim 1 is used by the claim to mean “thin film formed by plasma deposit”, while the accepted meaning of “plasma-treatment” is “modify a layer with plasma but still maintains the structure of the layer.” The term is indefinite because the specification does not clearly redefine the term.

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By reciting specific material “thin film is formed of a **material** selected from the group consisting of carbon based material, silicon based material, silicon carbide based material, and cadmium sulfide based material” (as amended), Applicant clearly equates “plasma-treatment” as plasma deposit.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hung (U.S. Patent No. 6,208,077) of record.

With respect to claim 1, as best understood by the examiner, Hung teaches an organic electroluminescent device (200) substantially as claimed including:

hole injecting electrode (204), a hole injecting layer (206), a light emitting layer (214), and an electron injecting electrode (208) in this order. (See Fig. 2).

Thus, Hung is shown to teach all the features of the claim with the exception of further includes a thin film on the surface of the hole injecting layer on the side of the light emitting layer.

However, in another device of Fig. 3, Hung teaches to enhance hole injection and improve operational stability of an organic EL device, an thin film is formed on the surface of

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the hole injecting electrode, wherein the thin film is formed of a material selected from the group consisting of carbon based material. This film can serve to improve the film formation property of subsequent organic layers and to facilitate injection of holes into the hole transporting layer resulting in increased luminance efficiency and operational stability of the EL device.

Note that, the anode (204) are well known in the art to be a hole injecting layer if no additional hole injecting layer is used.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form a thin film on the hole injecting layer of the device (200) of Hung as refined by device (300) to improve device stability.

Furthermore, it has been held that mere duplication of the essential working parts of a device, in the instant case an additional layer to perform a same function, involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Product by process limitation:

The expression “a thin film formed by plasma-treatment” is/are taken to be a product by process limitation and is given no patentable weight. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of

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the product “gleaned” from the process steps, which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

**Note that Applicant has burden of proof in such cases** as the above case law makes clear.

With respect to claim 2, the thin film (306) of Hung is a non-crystalline material.

With respect to claims 4-6, the thin film (306) of Hung is formed of halide or carbon based halide or fluorocarbon ( $\text{CF}_x$ ).

With respect to claim 7, the hole injecting layer (206) of Hung is formed of a material selected from the group consisting of a phthalocyanine compound.

With respect to claims 8 and 9, the thin film (306) of Hung has a thickness of 0.4-1 nm, thus overlaps the claimed range ( $5 \text{ \AA} \leq x \leq 50 \text{ \AA}$ ) or ( $5 \text{ \AA} \leq x \leq 12 \text{ \AA}$ ).

With respect to claim 10, the hole injecting layer (206) of Hung is formed of copper phthalocyanine (CuPc), and the thin film (306) is formed of fluorocarbon ( $\text{CF}_x$ ).

### ***Response to Arguments***

5. Applicant's arguments filed August 9, 2005 have been fully considered but they are not persuasive.

Regarding claim objection:

Applicant appears to contend on record that there is no difference between “plasma-treatment” and “plasma-deposit”, citing the specification page 7, lines 3-5. Thus, the objection is withdrawn.

However, since “plasma-treatment” is the same as “plasma-deposit” the claim is now indefinite for lacks of clarity and precision. (See rejection above).

Regarding rejection under 35 U.S.C 103(a):

Applicant argues that Hung does not disclose suggest a structure in which the CuPc later and the thin plasma polymer film are provided between the anode and the hole transporting layer or its working effect.

However, in the Background of the Invention, Hung clearly states: (in the prior art device) the CuPc layer interposed between the ITO and a hole transport layer results in a substantial increase of the drive voltage because of a hole injection barrier present at the interface between the CuPc and the hole-transporting layer NPB.

The present of the plasma polymer between the hole injecting layer and hole transporting layer exhibits enhanced hole injection and improve device operational stability, hence it working effect.

Applicant further argues: Hung fails to disclose or suggest a structure including both a hole injection layer and a hole injection electrode.

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As clearly indicated in the rejection that it is well known in the art that the anode (204), a hole injecting electrode, also function as hole injecting layer if no additional hole injecting layer is used. An addition of the hole injecting layer (206) is provided by device 200.

Also, as discussed earlier, the problem is at the interface between the hole injecting layer and hole transporting layer. By providing the plasma polymer between these two layers the performance of the device is improved.

Since Hung has pointed out the problem and provided a solution, thus, the combination has rendered the claim obvious.

### *Conclusion*

6. The incorporation of claim 3 into claim 1, has altered the scope of the claims. Thus, the rejection is seen as new ground of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,



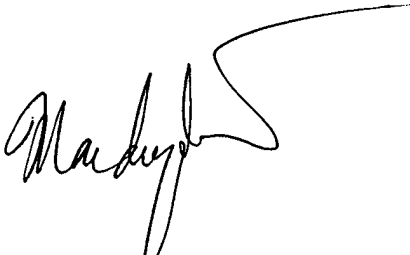
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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**ANH D. MAI**  
**PRIMARY EXAMINER**